CSc 372 — Comparative Programming Languages
Spring 2017 (McCann)

http://www.cs.arizona.edu/classes/cs372/spring17/

Homework #2
(95 points)

Due Date: February 17th, 2017, at the beginning of class

Solutions to homeworks in this class should be written using a word processor and are to be electronically submitted as a single PDF file (using lectura's `turnin` utility).

Write complete, legible answers to each of the following questions. A problem identified as "C.q(x,z)" references parts x and z of question q from the end of chapter C of the Louden/Lambert text, 3rd edition. Show your work, when appropriate, for possible partial credit. This is not a group project; do your own work. We will post our solutions $\geq$ 24 hours after the due date (remember, you can use one late day on homeworks, so we can't give solutions on the due date).

On the due date, by the start of class, submit your electronically–formatted version of your solutions (the turnin folder is `cs372h2`). If you need to submit your solutions within the 24-hour late window, place your printout in Dr. McCann's mailbox in CS 713 as soon as you are able to do so. Solutions submitted more than 24 hours after the due date and time will not be accepted.

Chapter 2 (Language Design Criteria)

1. (5 points) 2.4

2. (5 points) 2.5

3. (10 points) 2.7

Chapter 5 (Object-Oriented Programming)

4. (5 points) 5.6

5. (5 points) In Ruby, the Hash class inherits from Enumerable, suggesting to a programmer that Hashes are collections. In Java, however, the Map classes are not part of the JCF (Java Collections Framework). For each language, provide (and justify) an advantage of its choice of location in the class hierarchy of its form of associative list.

6. (5 points) 5.15

7. (10 points) 5.20 Use only Java and Ruby as the languages.

8. (5 points) 5.29

Chapter 6 (Syntax)

9. (5 points) Many languages (e.g., C and Java) distinguish the character 'c' from the string "c" with separate sets of quotation marks. Others (e.g., Python) use "c" for both single characters and strings of length one. Provide (and justify) one advantage and one disadvantage of Python's approach.

10. (10 points) Add subtraction and division to the BNF grammar provided in Figure 6.17 on page 220 of our text. Make sure that they possess the expected precedences.

11. (10 points) 6.14(b,e)

12. (5 points) 6.22 (The "simple integer arithmetic grammar" is given in Figure 6.4 on page 212 of our text.)

13. (5 points) 6.37 (Just answer for C and Java.)

14. (10 points) 6.41(a,b)